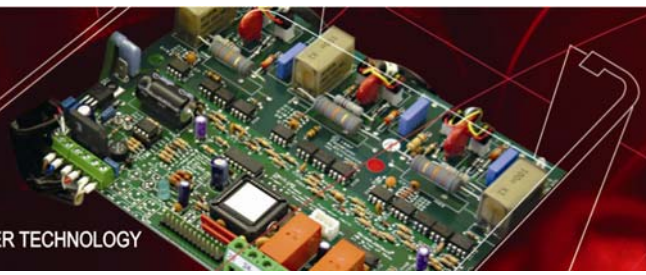
Soft Starters remain the first choice for starting fixed speed AC motors, despite the falling cost of VSDs.

One of the most frequently asked questions today in the drives market is: "Why bother with soft starters when variable speed drives (VSD) perform the same function at competitive cost?" For manufacturers of soft starters this question could be difficult. However, no one is panicking - why? Well there are a number of very good reasons why soft starters continue to be the equipment of choice for starting fixed speed motors, an assertion backed-up by the continuing inclusion of soft starter products in the product ranges of the majority of major control equipment manufacturers.

In a highly competitive market such as the UK's, the primary reason for using a soft starter has to be cost. True, at the lower end of the control range, from 1kW to 5kW, there is little to choose between the cost of a soft starter and that of a VSD. However, this area is not really representative in terms of soft starter usage, the majority of applications being on much larger kW motors. And this is where soft starters come into their own in cost terms. Above 5kW the price differential becomes exponential in favor of soft starters; the cost of a Fairford QFE unit being approximately 33% of that of an equivalent variable speed drive at 22kW and just 20% at 100kW.

In the case of Fairford's QFE unit, this intrinsic cost advantage is complemented by the ability to be connected directly into the Delta of AC motor starters, thus reducing the size of soft starter required for a particular kW motor. For example: in the case of a 7.5kW motor "in-the-line," a Fairford QFE (7.5kW) soft starter would be required. However, "in the Delta" a much smaller soft starter - a 4kW unit can be employed, leading to substantial cost savings for the user. Clearly then, soft starters remain the equipment of choice in cost terms for starting fixed speed motors.



However, there are other compelling reasons for their specification: simplicity in operation and installation (an “in the line” QFE unit requires only three wires) and special functionality not available on VSDs.

Although the focus in today’s control market tends to be exclusively on the ever-higher levels of functionality provided by variable speed drives, this is not totally representative, as developments with soft starters (i.e. fixed speed drives) have not been standing still. In fact the definition of what constitutes a soft starter today is totally different to that provided even a decade ago. Going beyond facilities for stopping and starting, soft starters such as Fairford’s QFE unit now integrate features common to many VSDs, including electronic shear pin, under current detection and energy optimizing. However, Fairford’s QFE unit goes further, offering features such as inductive load control, which are not available on variable speed drives.

Inductive Load Control is particularly useful with certain types of non-motor loads that contain significant inductance and which can create severe effects on a power distribution network when they are being connected to it. The most frequently encountered loads with this characteristic are large transformers and heaters. A de-energised transformer can draw an extremely heavy inrush current (up to 20 times the full-load current) if it is switched directly to a power network.

The effects of this current can be severe voltage dips, lamp flicker and the disruption of sensitive equipment. However, by regulating the energising process with a Fairford QFE controller, these effects are eliminated and the transformer will be brought on line within its full load current.

A UK Application Example Highlights the Benefits of Inductive Load Control

UK company, Newage AVK SEG, is employing the inductive load control feature of a Fairford QFE unit in a system that cuts the time for resin impregnation of alternator windings from an average of half an hour to as little as 10 minutes.

The impregnation system controls the temperature of stator windings during a resin impregnation process. This involves heating up the stator, dipping it in the varnish, then heating it up again to between 140°C to 180°C to achieve final hardening.

Central to this process, the Fairford QFE unit is being used as a voltage control device feeding the heating transformer. Its function is to ensure that the transformer remains within its current limits during the stator heating cycle, a necessary condition for controlling the quality of the impregnation process.

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